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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/706,440 | 11/12/2003 | Sharon Duvdevani | U 014858-1 | 8689 |
| 140 | 7590 | 08/11/2004 | EXAMINER | |
| LADAS & PARRY 26 WEST 61ST STREET NEW YORK, NY 10023 | | | KIBLER, VIRGINIA M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2623 | |

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/706,440 | Applicant(s) DUVDEVANI ET AL. | |
| | Examiner Virginia M Kibler | Art Unit 2623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>111203</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description: 1050 (Page 80, para. 3 and 4). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: "provding" should be changed to "providing" on page 7, para. 5, line 4; "a a" should be changed to "a" on page 12, para. 9, line 1; "Applicant's copending U.S. patent application _____" should be changed to include "09/565,500" and "Pat. No. 6,437,312" on page 17; "--Illumination for Inspecting Surfaces of Objects"-- should be changed to "--Illumination for Inspecting Surfaces of Articles"--

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- on page 18, line 1; "specifc" should be changed to "specific" on page 20, para. 3, line 5; "programable" should be changed to "programmable" on page 25, line 16; "the the width" should be changed to "the width" on page 59, line 9; "can can not" should be changed to "can not" on page 66, line 9; and "ployline" should be changed to "polyline" on page 81, line 25.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8, 12-17, 19, and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scola et al. (6,714,679) in view of Aloni et al. (5,619,429).

Regarding claims 1 and 12, Scola et al. ("Scola") discloses a boundary identifier operative to generate a representation of boundaries of elements in an image of an object under inspection (Col. 4, lines 12-49); and a defect identifier operative to receive the representation of boundaries of elements and to analyze at least some locations of at least some boundaries in the representation of boundaries of elements to identify defects in the object (Abstract; Col. 2, lines 45-56; Col. 5, lines 42-67, Col. 6, lines 1-7; Col. 8, lines 47-65). Scola does not appear to recognize the object under inspection being an electrical circuit. However, Aloni et al. ("Aloni") discloses inspecting an electrical circuit for defects (Abstract; Col. 2, lines 34-42). Scola and Aloni are combinable because they are from the same field of endeavor of machine vision. At

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the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the object under inspection to include an electrical circuit. The motivation for doing so would have been because it is well known in the art and it would expand the versatility of the system to encompass inspecting electrical circuits. Therefore, it would have been obvious to combine Scola with Aloni to obtain the invention as specified in claims 1 and 12.

Regarding claim 21, Scola discloses acquiring an image of at least a portion of an object and inspecting the image for defects (Col. 4, lines 18-45). The arguments analogous to those presented above for claim 1 are applicable to claim 21.

Regarding claims 2-4, 13-15, and 22-24, Scola discloses the boundary identifier and the defect identifier are operative as hardware implementations, software implementations, or a combination thereof (Col. 16, lines 8-17).

Regarding claim 5, Scola discloses the defect identifier is operative to compare an actual location of at least one boundary from among the boundaries in the image under inspection to a location of corresponding boundary in at least one reference image (Abstract; Col. 2, lines 45-56; Col. 5, lines 42-67, Col. 6, lines 1-7; Col. 8, lines 47-65).

Regarding claim 6, Scola discloses the boundaries comprise contours (Figures 3-4).

Regarding claims 7 and 8, Scola does not appear to recognize including a putative defect detector. However, Aloni discloses including a putative defect detector operative to identify at least some putative defects (Col. 14, lines 53-65) and to analyze regions associated with the putative defects (Col. 26, lines 40-52). At the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the defect detection disclosed by Scola to include a putative defect detector. The motivation for doing so would have been because it is a

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well known and routinely utilized in the art in order to reduce false alarms. Therefore, it would have been obvious to combine Scola with Aloni to obtain the invention as specified in claims 7 and 8.

Regarding claims 16, 17, 25, and 26, Scola discloses analyzing at least one characteristic of a location of some of the boundaries including comparing at least one characteristic of a location of a selected boundary to at least one characteristic of a location of a corresponding boundary in a reference (Col. 7, lines 14-50).

Regarding claim 19, Scola discloses a threshold vicinity defined around at least one boundary in the at least one reference image and wherein the defect identifier is operative to determine whether a corresponding boundary in the image under inspection falls within the threshold vicinity (Col. 7, lines 14-50). The arguments analogous to those presented above for claims 7 and 8 are applicable to claim 19.

5. Claims 9, 10, 11, 18, 20, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scola et al. (6,714,679) in view of Aloni et al. (5,619,429) as applied to claims 1, 8, 12, and 21 above, and further in view of Bachelder (5,974,169).

Regarding claims 9 and 10, Scola does not appear to expressly state identifying a region of interest. However, Bachelder discloses identifying bounding boxes or regions (Abstract), thereby a region of interest identifier, and analyzing only those boundaries in the region of interest (Abstract). Scola, Aloni, and Bachelder are combinable because they are from the same field of endeavor of machine vision. At the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the inspection disclosed by Scola and Aloni to include a region of interest identifier. The motivation for doing so would have been because it is

a well known methodology used in the art are increases efficiency by limiting the search area. Therefore, it would have been obvious to combine Scola and Aloni with Bachelder to obtain the invention as specified in claims 9 and 10.

Regarding claim 11, the arguments analogous to those presented above for claims 9 and 10 are applicable to claim 11.

Regarding claims 18 and 27, the arguments analogous to those presented above for claim 9 are applicable to claims 18 and 27.

Regarding claim 20, the arguments analogous to those presented above for claims 9 and 19 are applicable to claim 20. Bachelder discloses a threshold vicinity comprising an envelope around at least one boundary in the at least one reference image (Figure 3). At the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the threshold vicinity disclosed by Scola to include an envelope. The motivation for doing so would have been because it accounts for errors arising from any coarse part location error, image acquisition error, or real-world location error (Col. 7, lines 26-32). Therefore, it would have been obvious to combine Scola and Aloni with Bachelder to obtain the invention as specified in claim 20.

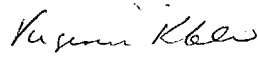
Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Virginia Kibler can be reached on (703) 308-4072. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Virginia Kibler
08/09/04

MEHRDAD DASTOURI
PRIMARY EXAMINER

